

## User's Guide

Welcome to the Location File for the Detroit River! The Detroit River is a connecting channel on the Great Lakes waterway that joins Lake St. Clair with Lake Erie. The river forms part of the international boundary between the United States and Canada in southeastern Michigan and southern Ontario. The river is about 32 miles long from its head at the Windmill Point Light to its mouth at the Detroit River Light in Lake Erie. The fall in water level from Lake St. Clair to Lake Erie is about three feet.



Blue text represents water bodies or waterways.

NOAA has created Location Files for different U.S. coastal regions to help you use the General NOAA Operational Modeling Environment, GNOME. In addition, on a case-by-case basis, NOAA develops international Location Files when working with specific partners.

Each Location File contains information about local oceanographic conditions that GNOME uses to model oil spills in the area covered by that Location File. Each Location File also contains references to help you learn more about the location you are simulating.

As you work with the Location File for the Detroit River, GNOME will prompt you to:

1. Choose the model settings (start date and time, and run duration).
2. Set the Detroit River flow rate.
3. Input the wind conditions.

GNOME guides you through each of these choices. Each window has a button that leads you to helpful information and the general Help topic list. If you need help setting up the model, click the “Help” button. To learn more about setting the river flow rate, click the “Finding Flow Data” button. When you need to input the wind conditions in the “Choosing Wind Type” window, you can click the “Finding Wind Data” button to see a list of web sites that publish wind data for this region.

More information about GNOME and Location Files is available at <http://response.restoration.noaa.gov/gnome>.

## **Technical Documentation**

### ***Background***

The Detroit River flows from Lake St. Clair on the north to Lake Erie on the south. The river is approximately 32 miles long and forms part of the international boundary between the United States and Canada. The upper third of the river is narrow channel whereas the lower two-thirds widens and has many islands.

### ***Current Patterns***

The Detroit River Location File contains one current pattern. The current pattern was created with the NOAA Current Analysis for Trajectory Simulation (CATS) hydrodynamic application. The tidal current pattern is calibrated using the NOAA Center for Operational Oceanographic Products and Services (CO-OPS) port stations in the Detroit River. It should be noted that the model should not be used if the river is ice covered.

### ***References***

You can get more information about the Detroit River area from these publications and web sites:

## **General Information**

Detroit/Wayne County Port Authority

<http://www.portdetroit.com/statistics/index.htm#GREATLAKESWATERLEVELS>

Link to Detroit/Wayne County Port Authority and water levels in the Great Lakes.

NOAA: Center for Operational Oceanographic Products and Services

<http://glakesonline.nos.noaa.gov/>

Provides immediate graphical and tabular water level and meteorological data from National Ocean Service (NOS) water level stations located along the projected path of severe storms.

U.S. Army Corps of Engineers: Detroit District

<http://www.lre.usace.army.mil/>

The Corps is an important partner in Congressionally-authorized water resource projects (related to navigation, flood control, beach erosion, and other activities) designed to help protect the economy and the environment of U.S. coastal areas

U.S. Army Corps of Engineers: Detroit District Hydraulics and Hydrology

<http://www.lre.usace.army.mil/greatlakes/hh/>

Links to water levels, outflows, weather information, and flood monitoring.

Great Lakes Observing System (GLOS)

<http://glos.us/>

Provides public access to critical, real-time and historical information about the Great Lakes, St. Lawrence River, and interconnecting waterways.

GLOS: Huron-Erie Corridor Nowcast/Forecast

<http://glos.us/hecwfs/>

Online access to real-time forecasts of levels and flows throughout the Huron-Erie Corridor (HEC).

U.S. Army Corps of Engineers: Detroit River

[http://www.lre.usace.army.mil/greatlakes/hh/outflows/discharge\\_measurements/detroit\\_river/](http://www.lre.usace.army.mil/greatlakes/hh/outflows/discharge_measurements/detroit_river/)

Background on the Detroit River.

## **Oceanography**

Visualization of Drifting Buoy Deployments on Upper Detroit River within the Great Lakes Waterway from August 28-30, 2001

<http://mi.water.usgs.gov/pubs/OF/OF02-1/>

U.S. Geological Survey Open File Report 02-1. Lansing, Michigan, 2002.

Drifting buoys containing global positioning system (GPS) receivers were deployed on

the Detroit River to help investigate flow characteristics of four selected reaches as part of a source water assessment study of public water intakes.

USGS: Flow Modeling Study of the St. Clair - Detroit River Waterway

<http://mi.water.usgs.gov/progproj/mi08900.html>

A study that identifies likely sources of water to public supply intakes and provides a basis for planning emergency responses to contaminant spills.

Great Lakes Information Network (GLIN): Lake St. Clair

<http://www.great-lakes.net/lakes/stclair.html>

A partnership that provides an ecosystem-based approach to management of the natural, cultural, and economic resources of the Great Lakes.

An Acoustic Doppler Current Profiler Survey of Flow Velocities in Detroit River, a Connecting Channel of the Great Lakes

<http://mi.water.usgs.gov/pubs/OF/OF03-219/index.php>

U.S. Geological Survey Open-File Report 03-219. Lansing, Michigan, 2003.

Acoustic Doppler current profilers (ADCP) were used to survey flow velocities in Detroit River from July 8-19, 2002, as part of a study to assess the susceptibility of public water intakes to contaminants on the St. Clair-Detroit River Waterway.

A Two-Dimensional Hydrodynamic Model of the St. Clair-Detroit River Waterway in the Great Lakes Basin

<http://mi.water.usgs.gov/pubs/WRIR/WRIR01-4236/index.php>

U.S. Geological Survey Water-Resources Investigation 01-4236. Lansing, Michigan, 2001.

A two-dimensional hydrodynamic model was developed to compute flow velocities and water levels as part of a source water assessment of public water intakes.

## **Wind and Weather**

National Weather Service, Detroit/Pontiac, MI

<http://www.crh.noaa.gov/dtx/>

Current weather conditions and forecasts for locations throughout Michigan.

National Weather Service, Detroit/Pontiac, MI, Marine Forecasts

<http://www.crh.noaa.gov/dtx/marine.php>

Graphical marine forecasts for Lake Huron and Lake St. Clair.

Michigan State Information from Interactive Weather Information Network (IWIN)

<http://www.weather.gov/view/states.php?state=Mt&map=on>

Current, site-specific weather observations for Michigan locations.

Interactive Weather Information Network (IWIN), Forecasts from Michigan (text only version)

<http://www.weather.gov/view/states.php?state=mi>

State and zone forecasts and weather data for Michigan.

### **Oil Spill Response**

NOAA Emergency Response Division (ERD)

<http://response.restoration.noaa.gov>

Tools and information for emergency responders and planners, and others concerned about the effects of oil and hazardous chemicals in our waters and along our coasts.